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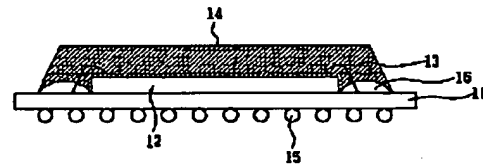
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(54) RESIN-SEALED SEMICONDUCTOR DEVICE

(57) Abstract:

PROBLEM TO BE SOLVED: To minimize warp of a substrate in a semiconductor device wherein a semiconductor chip is mounted on a substrate, a bump for external connection is provided in the rear of the substrate and the semiconductor chip is sealed with resin.

SOLUTION: In a resin-sealed semiconductor device wherein a semiconductor chip 12 is mounted on a substrate 11, a solder bump 15 for external connection is provided in the rear of the substrate 11 and the semiconductor chip 12 is sealed with resin 14, a stress buffer part 16 where to stress buffer material is applied is provided between the surface of the substrate 11 at the side of the semiconductor chip 12 and the sealing resin 14.



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3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the structure of a resin seal semiconductor device.

[0002]

[Description of the Prior Art] Conventionally, there was a thing as shown below as this kind of equipment. Drawing 3 is the sectional view of this conventional resin seal semiconductor device. As shown in this drawing, after carrying out dice bond of the semiconductor chip 2 to the substrate 1, wire bond of a substrate 1 and the semiconductor chip 2 was carried out with the Au wire 3, the semiconductor chip 2 and the Au wire 3 were closed by closure resin 4, and the solder ball 5 was attached to the opposite side of a substrate 1.

[0003]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional resin seal semiconductor device, since closure resin 4 was only in one side of a substrate 1, there was a trouble that the curvature of a substrate was large and it was inferior to dependability. This invention removes the above-mentioned trouble, carries a semiconductor chip on a substrate, prepares the bump for external connection in the rear face of the substrate, and aims at offering the resin seal semiconductor device which can suppress the curvature of a substrate as much as possible in the resin seal semiconductor device which closes said semiconductor chip by resin.

[0004]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention carries a semiconductor chip on (1) substrate, prepares the bump for external connection in the rear face of this substrate, and prepares the stress relaxation section which applied stress relaxation material between the substrate by the side of said semiconductor chip, and closure resin in the resin seal semiconductor device which closes said semiconductor chip by resin.

[0005] Thus, since the stress relaxation section which applied stress relaxation material was prepared between the substrate by the side of a semiconductor chip, and closure resin, the stress between closure resin and a substrate can be eased, curvature can be reduced, and improvement in dependability can be aimed at.

(2) Carry a semiconductor chip on a substrate, prepare the bump for external connection in the rear face of this substrate, carry a semiconductor chip on the substrate which possesses the stress relaxation section which embedded stress relaxation material in the substrate side by the side of said semiconductor chip in the resin seal semiconductor device which closes said semiconductor chip by resin, and prepare the stress relaxation section which applied stress relaxation material between a substrate and closure resin in the resin seal semiconductor device closed by resin.

[0006] Thus, since the stress relaxation section which embedded stress relaxation material was prepared in the substrate side by the side of said semiconductor chip, the stress between closure resin and a substrate can be eased, curvature can be reduced, and improvement in dependability can be aimed at.

[0007]

[Embodiment of the Invention] Hereafter, it explains to a detail, referring to drawing about the gestalt of operation of this invention. Drawing 1 is the sectional view of the resin seal semiconductor device in which the 1st example of this invention is shown. First, dice bond of the semiconductor chip 12 is carried out to a substrate 11, and wire bond of a substrate 11 and the semiconductor chip 12 is carried out with the Au wire 13. Then, on the substrate 11 of the circumference of a semiconductor chip 12, the high matter of the stress relaxation effectiveness, such as silicone, is applied as stress relaxation material, the stress relaxation section 16 is formed, it heats, and the need is responded and stiffened, and it closes by closure resin 14, and the solder ball 15 is attached to the opposite side of a substrate 11. [0008] Thus, since it constituted, it becomes possible to be able to ease the stress produced between closure resin 14 and a substrate 11, consequently to reduce curvature from the difference in coefficient of linear expansion, by the stress relaxation section 16. Next, the 2nd example of this invention is explained. Drawing 2 is the sectional view of the resin seal semiconductor device in which the 2nd example of this invention is shown.

[0009] In this example, a hollow is formed in a substrate and the stress relaxation section which embedded stress relaxation material there is prepared. As shown in this drawing, hollow 21a for embedding stress relaxation material at a substrate 21 is opened first, and the stress relaxation section 27 is formed here. As stress relaxation material, the high matter of the stress relaxation effectiveness, such as silicone, is used. Next, after carrying out dice bond of the semiconductor chip 22 to the substrate 21 which has the stress relaxation section 27 which embedded this stress relaxation material and carrying out wire bond of a substrate 21 and the semiconductor chip 22 with the Au wire 23, it closes by closure resin 24 and the solder ball 25 is attached to the opposite side of a substrate 21.

[0010] Thus, since it constituted, it becomes possible to be able to ease the stress produced from the difference in coefficient of linear expansion between closure resin 24 and a substrate 21, consequently to reduce curvature by the stress relaxation section 27 formed in the substrate 21. In addition, this invention is not limited to the above-mentioned example, and based on the meaning of this invention, various deformation is possible for it and it does not eliminate these from the range of this invention.

[0011]

[Effect of the Invention] As mentioned above, according to this invention, the following effectiveness can be done so as explained to the detail.

(1) Since according to invention according to claim 1 stress relaxation material is applied and the stress relaxation section was formed between the substrate by the side of a semiconductor chip, and closure resin, the stress between closure resin and a substrate can be eased, curvature can be reduced, and improvement in dependability can be aimed at.

[0012] (2) Since the stress relaxation section which embedded stress relaxation material was prepared in the substrate side by the side of a semiconductor chip according to invention according to claim 2, the stress between closure resin and a substrate can be eased, curvature can be reduced, and improvement in dependability can be aimed at.

[Translation done.]